BCCP 2025 introductions

Dylan Green

New Postdoc at LBL | dylanag@uci.edu (or dylangreen@lbl.gov)

Former Work:

QuasarNET (arxiv:2505.01596)

- Updated QuasarNET training using Active Learning

Bayesian Coaddition

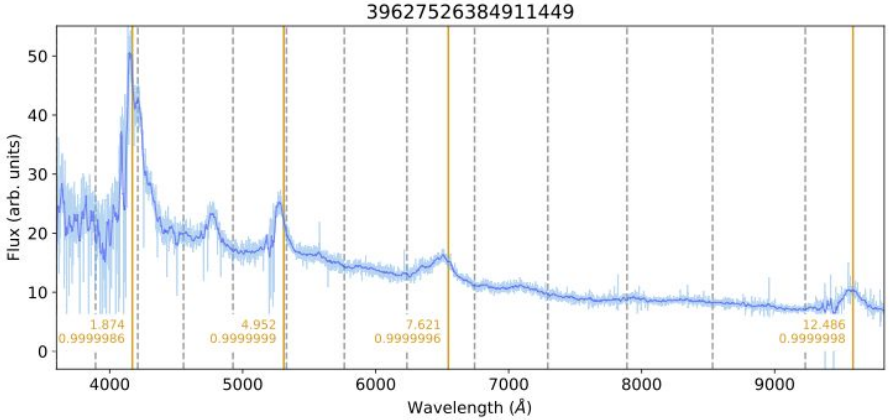
- Coadding spectroscopic exposures using Bayes' theorem and likelihoods

Nonnegative Matrix Factorization Templates (doi:10.1109/TSP.2024.3474530)

- Using NMF to generate spectroscopic templates (for redrock or other purpose)

Future Work:

- Technical: work with the DESI Survey Operations and Data Operations teams at LBL
- Science: Still TBD (too many options to choose from, but probably LyA/quasar related)



DARK ENERGY SPECTROSCOPIC INSTRUMENT

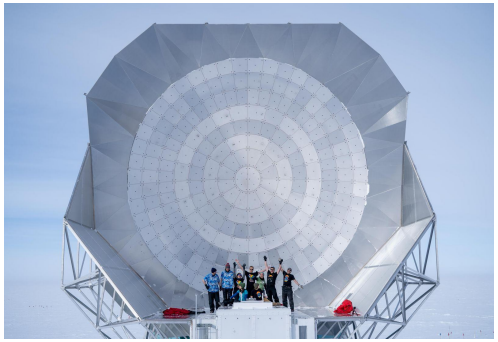
U.S. Department of Energy Office of Science

Hobbies:

Watching movies, running, golf, fountain pens, writing, recreational programming, stamp collecting…

Anna Coerver

acoerver@berkeley.edu, Physics North 278



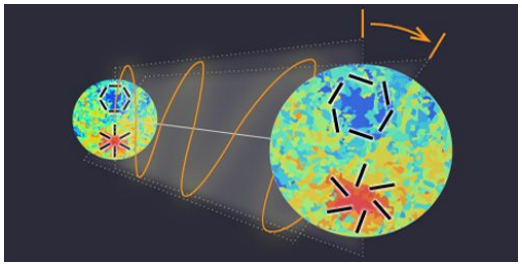
South Pole Telescope

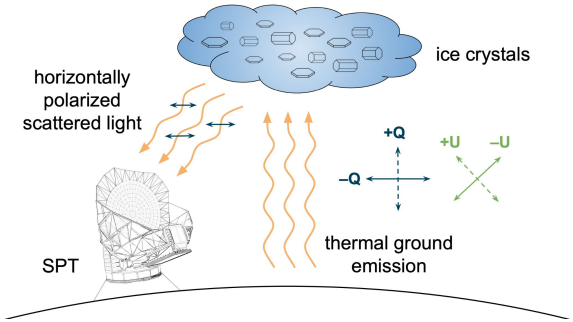
Grad student (Bill Holzapfel's group)

Currently interested in

- Cosmic birefringence
- Cryogenic instrumentation (SPT-3G+)
- CMB power spectrum noise, especially polarized atmospheric emission

Always happy to chat!





Joe DeRose

Staff Scientist @ BNL
jderose@bnl.gov

I'm a staff scientist at Brookhaven, but currently working remotely, largely at LBL!

Research:

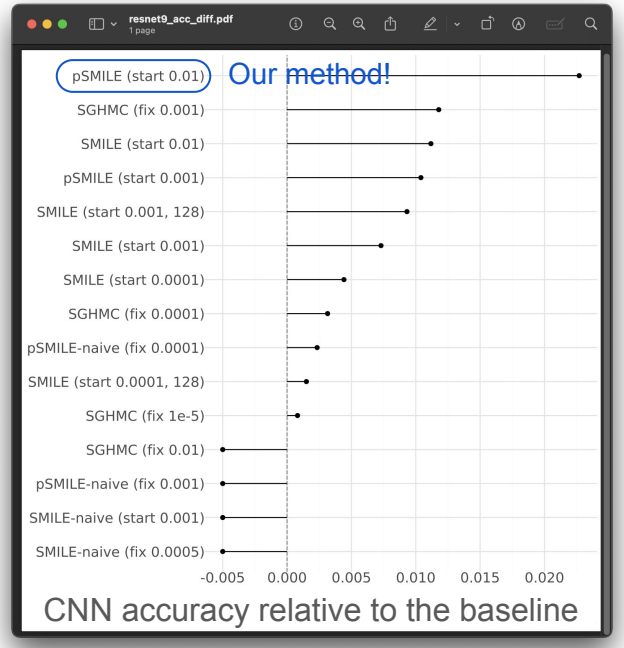
- How to optimally extract info from lensing and clustering data to probe gravity.
- How can we use DESI data to improve weak lensing measurements?
- Surveys: DESI, DES, LSST
    - Convener of Cross Analysis Infrastructure group in DESI (if you have DESI simulation/catalog questions)

Techniques: Simulations, Statistics and Machine Learning, HPC, Theory

Kangning Diao dkn20@berkeley.edu
Visiting student 24-25 -> Postdoc starting Oct 25 w/ Uros

Currently work on:

- Stochastic gradient MCLMC:
  - Given N observations, using n<<N random selected observations for each sampling step. (much faster!)
  - Sample high-dimensional variables, e.g. parameters in a convolutional neural network (CNN).
- Exoplanet candidate validation:
  - Check and improve the probability of different scenarios for exoplanet candidates.



Alina Sabyr (new BCCP fellow)

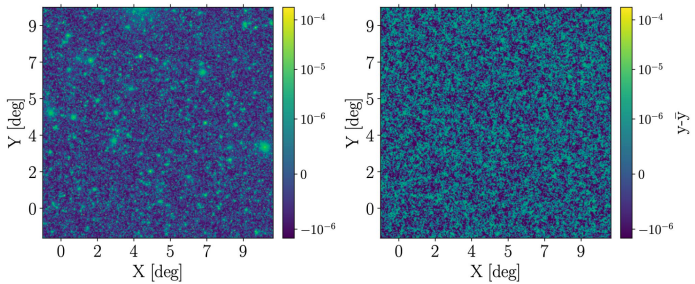
Contact: asabyr@berkeley.edu + Slack

Research interests (during grad school & ongoing):

- ➔ Extracting non-gaussian information from surveys (WL, tSZ) using NG statistics → astrophysics + cosmology
- ➔ Spectral distortions→ new experiment ideas
- ➔ FRBs → mapping distribution of baryons with dispersion measure

+ additional interests:

- ➔ Learning more about baryons by combining different probes (e.g., SZ, galaxy surveys, FRBs…)
- ➔ Machine learning
- ➔ + more (happy to chat!)



Columbia → UCB

Simona Mei

Distinguished Professor, U. Paris Cité
Affiliated to the international laboratory CNRS/UCBerkeley Pierre Binetruy Center
Responsible for the large-scale structure axis at the center

Galaxy formation and evolution, scaling relation and quenching

Galaxy clusters and galaxy evolution in different environments

First structures in the Universe: clusters and protoclusters at z>1.5

Deep learning for galaxy cluster detection: YOLO-CL

Builder member of the Euclid consortium

Rubin member, co-chair of the Rubin Galaxies Science collaboration, member of DESC

https://www.linkedin.com/in/simona-mei-1721bb3a/

Cara Giovanetti

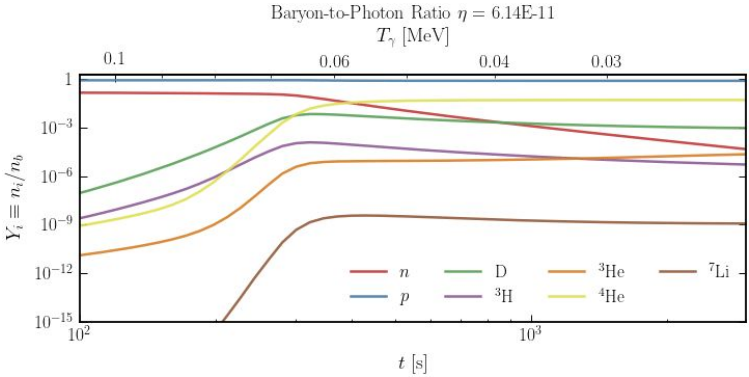
Reach me at
cgiovanetti@lbl.gov!

- I'm a BCTP post doc with research overlap with BCCP

Ask me about writing code in

- I want to modernize computational tools for cosmology. Previously I wrote a fast and differentiable BBN code called LINX and performed new parameter inference with it. Currently working on a fast and differentiable CMB code intended to compete with CLASS.

Fast calculation of primordial element abundances with LINX:



- I'm interested in using these tools to understand the particle nature of dark matter.

Pat McDonald

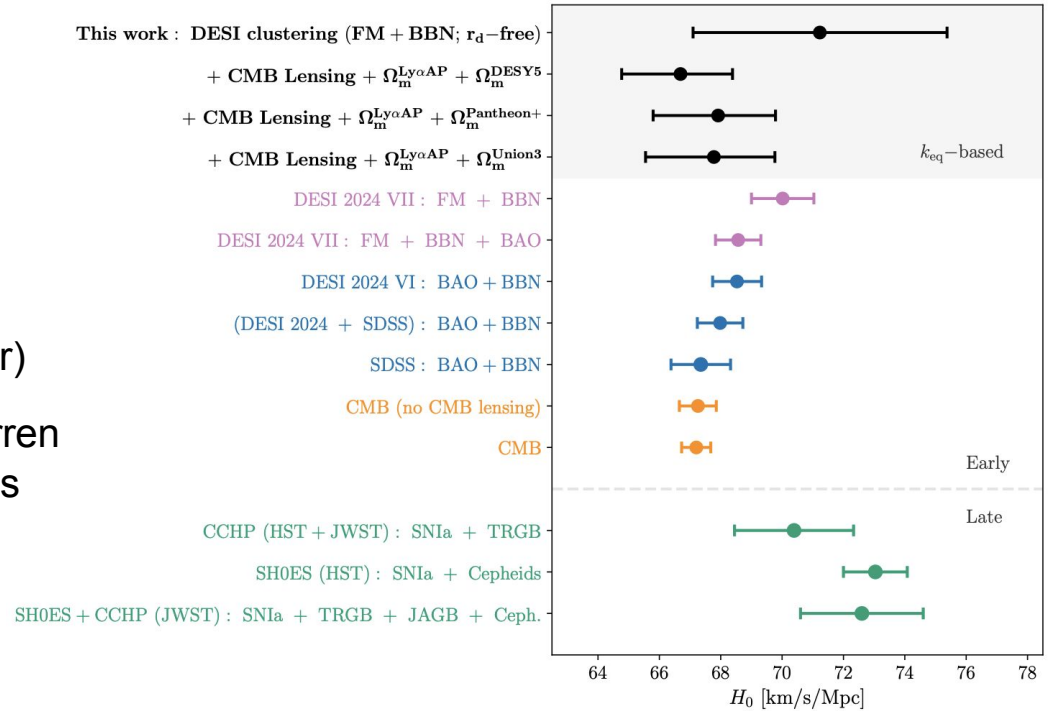
LBL

- Have worked on (and still dabble in)
  - Lyman-alpha forest
  - Large-scale structure theory (e.g., perturbation theory/EFT)
  - DESI galaxy clustering analysis
- Currently trying to attach machine learning for small scales to EFT-type thinking on large scales to fully and quickly model the statistical distribution of galaxies

Erik Zaborowski

Visiting PhD student
(Fall 2025)
ezaborowski@lbl.gov
zaborowski.11@osu.edu

- Visiting 5th year grad from Ohio State U (Advisor: Klaus Honscheid w/ Peter Taylor)
- Working with Simone Ferraro + Gerrit Farren on DESI ╳ CMB lensing cross-correlations
- Interests:
  - Large-scale structure / DESI
  - CMB (╳ galaxies)
  - Hubble tension / sound horizon-independent H_0 measurements



Black: *Sub-3% r_s-free H_0 constraint in DESI DR1 (Most precise to date) [2411.16677]*

Antón Baleato Lizancos

BCCP postdoctoral fellow

BERKELEY LAB

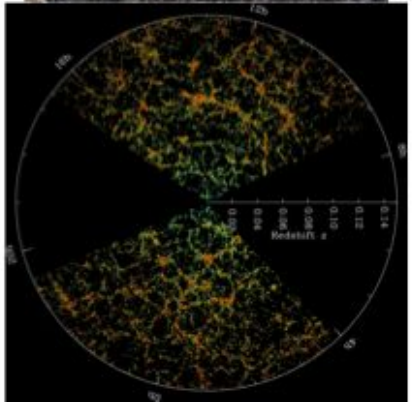
- CMB lensing / delensing theory and analysis. Member of SO analysis team, co-lead of delensing working group.
- LSS x CMB lensing. Co-lead of DESI x CMB topical group.
- New methodologies: pixel-free clustering estimators, finger-of-god mitigation, understanding anisotropic dN/dz's, modeling contribution from extragalactic foregrounds to CMB lensing reconstructions ++

a.baleatolizancos@berkeley.edu

Mark Maus

mark.maus@Berkeley.edu
5th year physics grad student

- Large scale structure with Martin White
- Cosmological constraints from galaxy/quasar clustering
- EFT models for analyses of RSD power spectra
  - + Post-recon BAO
  - + cross correlations with CMB lensing
- Involved in DESI
  - Galaxy&Quasar clustering (GQC)
  - Clustering/Clusters/Cross-correlations (C3)



John Banovetz- New LBNL Postdoc

- Working on the DESI spectropipeline with an emphasis on calibration products
- Previous work:
  - LSST/Rubin: Data Verification and Validation team and Camera group
  - PhD: supernovae and supernova remnants
- Interests: SN followup, ToOs, and Multi-messenger Astronomy

Kathlynn Simotas *(she/her/hers)*

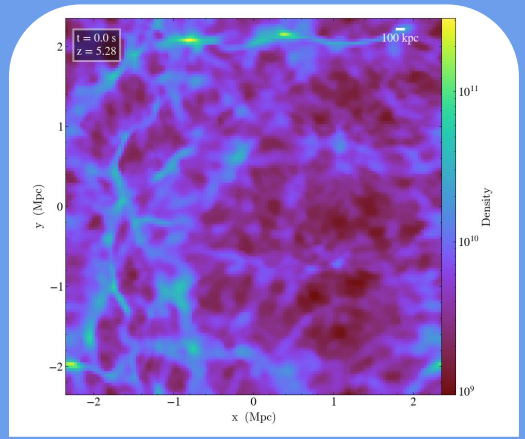
3rd year PhD Student @ UCSB Physics & DOE Computational Science Graduate Fellow @ LBL

At UCSB:

- Hydrodynamics & radiative transfer for supernovae with Lars Bildsten
- Lyα Forest & Reionization Simulations + Inference with Joe Hennawi

At LBL with Zarija Lukic:

- Radiative transfer methods for Nyx hydro code
- Diffusion methods towards Nyx foundation model



Here for the semester & looking forward to getting to know you!

UC **SANTA BARBARA**

Julien Guy
Staff scientist LBL
jguy@lbl.gov

DESI Spectroscopy:

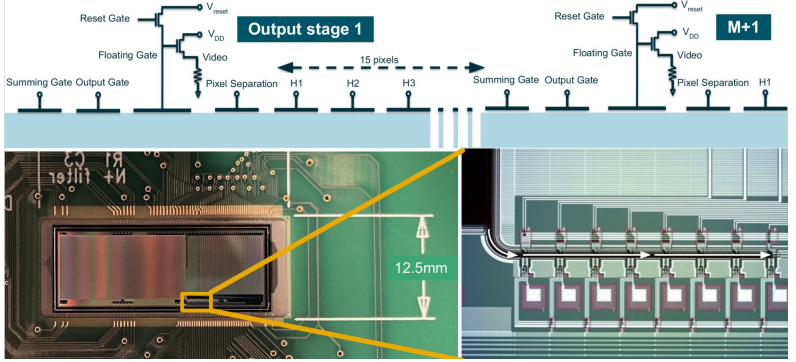
- CCD readout, calibration, validation
- Spectrograph focus, calibration
- Pipeline algorithms

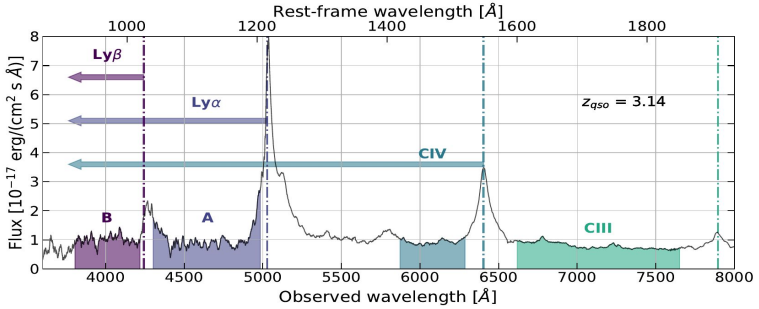
Instrumentation for DESI-II :

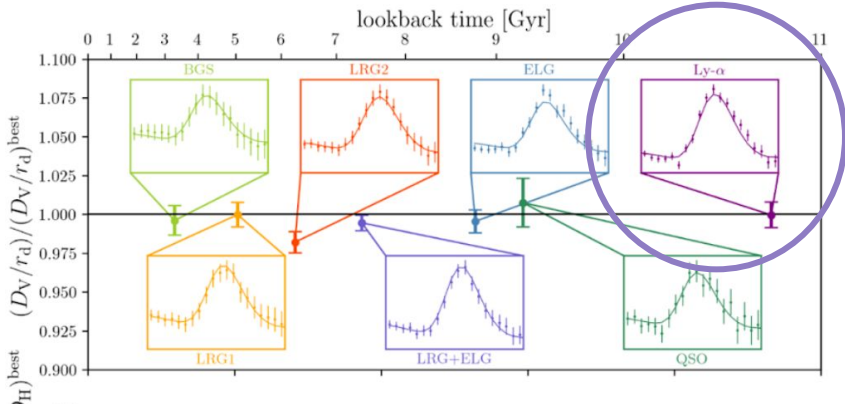
- Low readnoise “MAS” CCDs
- First tests: 0.6 electron rms
  (when reading a 4kx4k CCD in 1 min)

DESI Lyman-alpha analysis:

- BAO Year 3 full-shape with EFT
- Multiple redshift bins
- Tests of systematics with mocks







Elisa RUSSIER

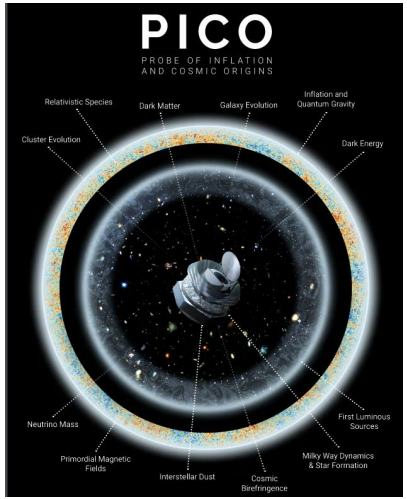
Contact: erussier@lbl.gov

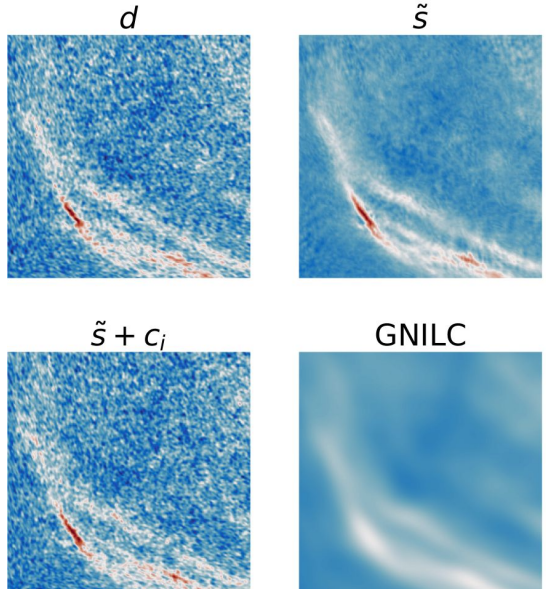
3rd year PhD student at Paris-Cité University → Graduating in October
PhD subject: CMB data analysis for next generation CMB experiments
PhD advisor: Jacques DELABROUILLE

Research interests:
How to improve our understanding of foreground models?
What is the impact of instrumental systematics on CMB r science?

Projects:

- Impact of realistic noise without a polarization modulator for the PICO mission
- Polarized dust emission maps of Planck PR4 maps





Collab. with Alexandros Tsouros and Erwan Allys at LPENS

Anshuman Acharya

BCCP postdoctoral fellow, starting September 2025

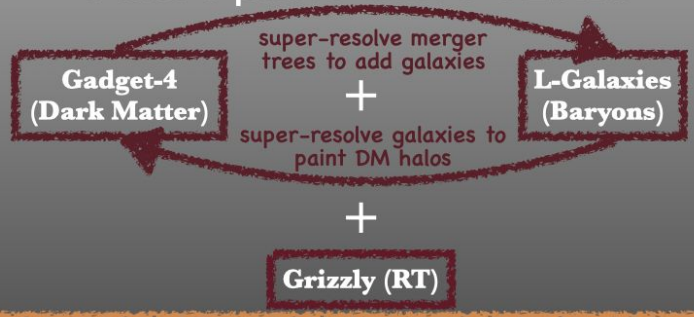
Epoch of Reionization: detecting and modelling the 21-cm signal power spectrum and other observables from the IGM, and cross-correlating with galaxy observables.

Semi-analytic models: for populating large parameter spaces of Universe models, without needing excessive computing time. Developing the *Polar* simulations.

Machine Learning:

At BCCP: working with the SynthObs team of the *Learning the Universe* collaboration.

Future plans with POLAR:



For signal extraction: learning from training sets of simulations, to look for specific signals in noisy data. E.g., variational autoencoders for extracting the 21-cm signal power spectrum from radio interferometer data.

For improved modelling: generative techniques via diffusion modelling are essential to boost the resolution of cosmological boxes, to factor in smaller scales in large simulations. Necessary to effectively explore parameter spaces without sacrificing resolution.

Contact: anshuman@mpa-garching.mpg.de, anshumanastro.com

Edmond Chaussidon (LBNL fellow)

DESI collaboration member since 2020.

PhD at CEA Saclay (France) from 2020 to 2023

At the lab since nov. 2023

Fake surfing in Santa Cruz
(watch the forecast twice next time!)

Previous Work:

- Quasar target selection for DESI
- Mitigation of imaging systematic in DESI
- Measurement of primordial non-gaussianity (PNG) via the scale-dependent bias (f_{NL}) with DESI DR1.
- Analysing DESI DR2 BAO.

Current Work:

- Topical Group lead for PNG with DESI DR2!
- Velocity reconstruction with kSZ (DESI x ACT)

Still enthusiast about coming to work at LBNL and looking forward to discovering new scientific subjects to which I can collaborate!

How do we measure the 21 cm signal from the Cosmic Dawn?

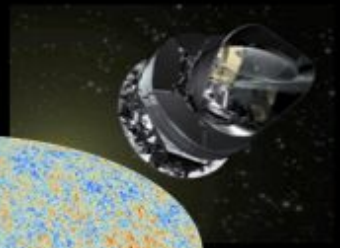
And what does it tell us?

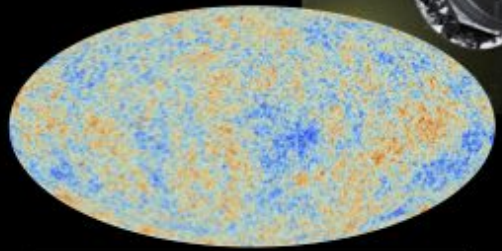
Josh Dillon

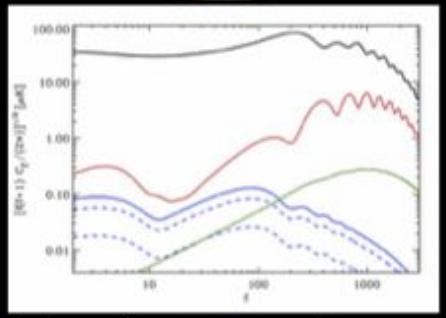
Asst. Research Scientist, RAL

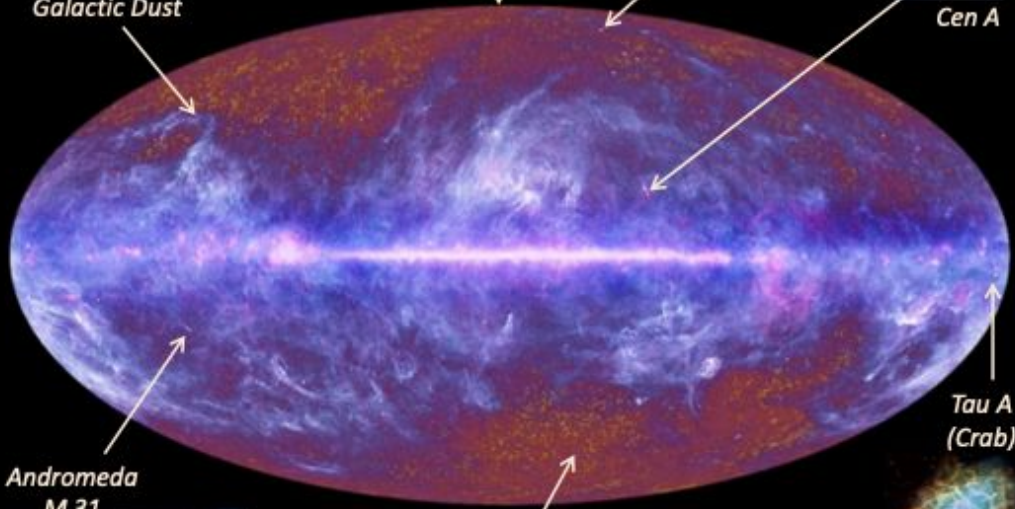
Jacques Delabrouille

Centre Pierre Binétruy (CNRS) & LBNL









Keywords:

CMB observations (Planck, CMB-S4)
CMB data analysis
Signal & image processing
Galactic and Extragalactic foregrounds
Microwave sky emission models & simulations

DARK ENERGY SPECTROSCOPIC INSTRUMENT

U.S. Department of Energy Office of Science

Allyson Brodzeller

Postdoc at Berkeley Lab

Interests:

- Lyman-alpha forest cosmology
  - Recent work on DLA survey techniques
- Quasar physics and evolution
  - Special interest in anomalies and outflow dynamics
- Maximizing the scientific return of large-scale experiments such as DESI
- Science policy

← my two kitties!

AllysonBrodzeller@lbl.gov

David Valcin (BCCP Postdoc w/ U. Seljak)

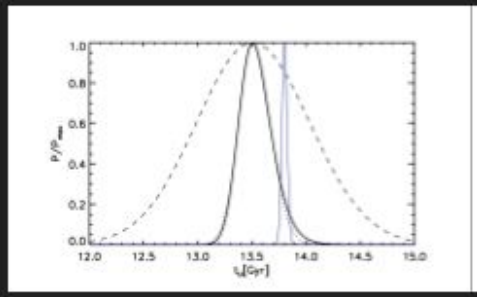
Research topics:

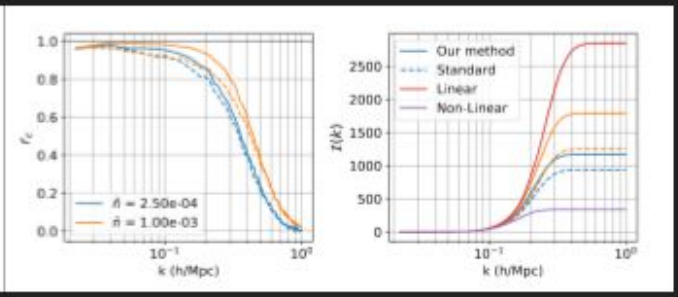
Alternative BAO reconstruction methods using machine learning

Applying Bayesian/ML tools to Globular Clusters analysis to constrain the Age of the universe

Interests:

Movies, Badminton, Ice cream





Simone Ferraro

Senior Scientist at LBNL
sferraro@lbl.gov

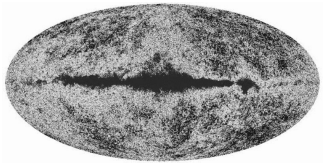
Research: cosmology (theory and analysis)

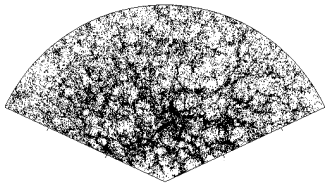
- CMB: secondary anisotropies (kSZ, tSZ, …) and lensing
- Inflation: primordial gravitational waves, non-Gaussianity
- Reionization: imprint of the first stars and galaxies
- Galaxy formation and evolution
- Galaxy surveys: DESI, LSST
- Statistics and Machine Learning

Interested in a research project? Visit my webpage at sferraro.lbl.gov

ZACK LI

BCCP Postdoc





- *Sampling / Optimization*
  - Large-scale sampling and optimization problems
  - MCLMC / CMB Lensing / applications to LuSE
- *21cm line intensity mapping*
  - Observational techniques for observing the redshifted 21-cm line
  - Calibration, foregrounds, experiment design
- *Science at ultra-long-wavelength*
  - LuSEE-Night and future lunar experiments

SIMONS OBSERVATORY

chime

LuSEE@Night

Abby Bault (she/her)

Postdoc at LBL | abault@lbl.gov
Office: 50-6062

Interests and Projects at LBL

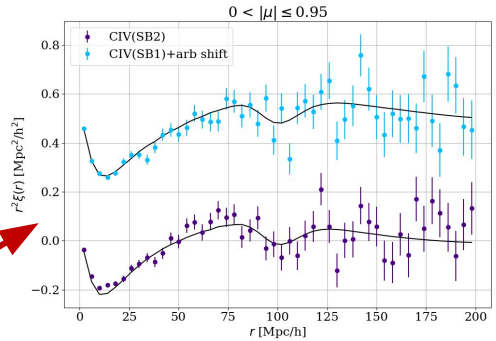
Instrumentation (~80% time)

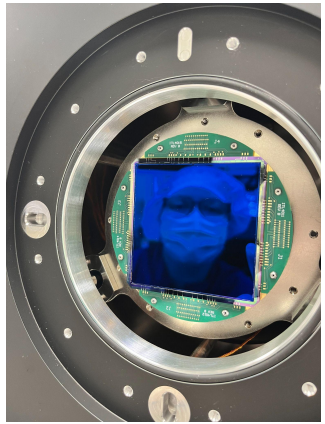
DESI focal plane, Positioner R&D [2508.19711], CCD R&D [2503.07930], DESI cryostats

Science (~20% time)

DESI Lyman-alpha forest group

Measuring BAO with the CIV forest





For fun

Watching hockey and other various sports, crocheting, puzzles, hiking, cat snuggles, LBL softball

DARK ENERGY SPECTROSCOPIC INSTRUMENT

U.S. Department of Energy Office of Science

Minas Karamanis

BCCP PostDoc

mkaramanis@berkeley.edu ♦ GitHub/minaskar ♦ Slack

Research interests

- Bayesian Machine Learning
- Development of scientific software (e.g., zeus, pocoMC, hankl, etc.)
- Gradient-free parameter estimation for 50–100 D
- Amortized Bayesian Model Comparison
- Applications to Cosmology (e.g., LSS, PNG, BAO) and Astronomy (e.g., gravitational waves, exoplanets)

Methods and techniques

- Probability and statistics
- Code (Python & Julia)
- Simulated data
- Analytic approaches
- ML & DL

pocoMC

zeus

Lightning Fast MCMC

Tian Xiao
(2nd-year PhD student, Particle Theory Group)

- **Research interests**: Dark matter at the intersection of particle physics, astrophysics and cosmology
- **Current project**: Constraining axion-like particles (ALPs) via photon-ALP mixing in blazar spectra

Haruki Ebina, fourth year PhD student

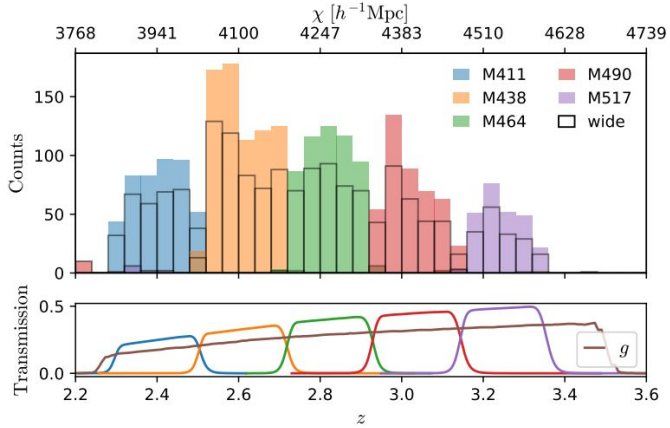
Advisor: Martin White

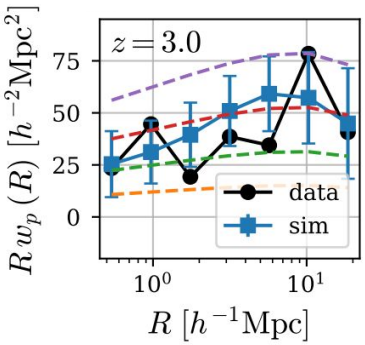
High-z cosmology using LAEs and LBGs

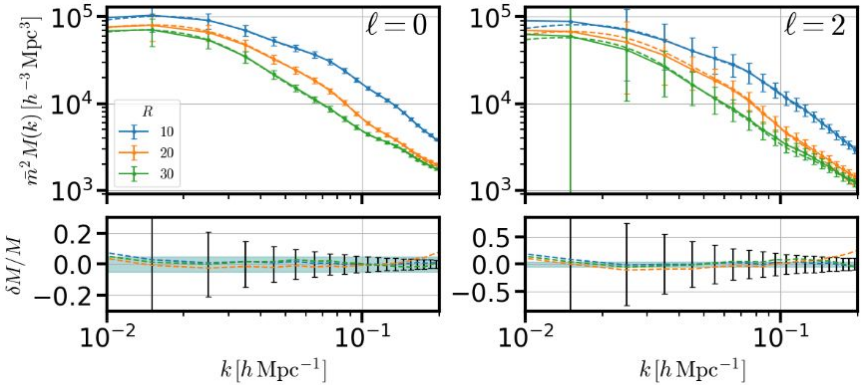
- Fisher forecasting for high-z multi-tracer surveys
- Target selection for DESI-II with medium bands from the IBIS (Intermediate Band Imaging Survey)
- Clustering analysis of IBIS-selected LAEs and LBGs using DESI spec-z's and HOD-based mock catalogs

Marked power-spectrum

- Perturbation theory based approach to density-marked statistics
- Can break degeneracies in power spectrum
- A step towards higher point statistics, but within the framework of two-point

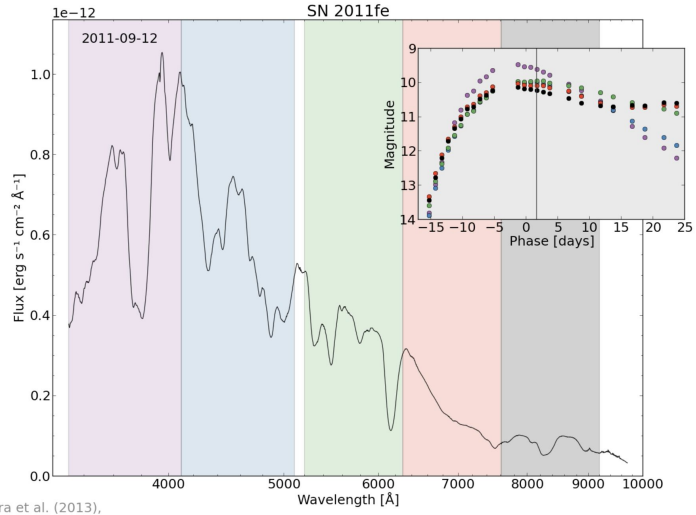




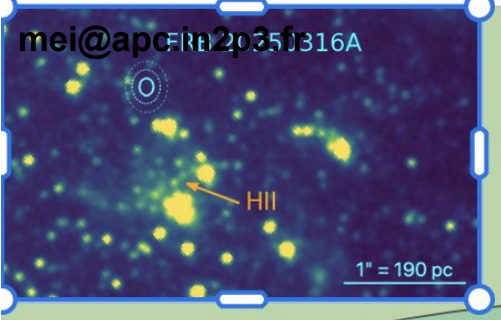


Anousha Greiveldinger (she/her)
2nd year PhD student
anousha@berkeley.edu

- Advisor: Saul Perlmutter
- Current Research Interests: Spectroscopy!
  - Spectroscopy of lensed Type Ia SNe
  - Forward modeling for Integral Field Spectrographs



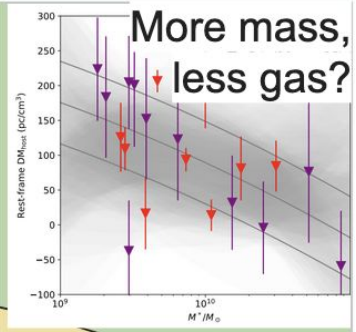
Pereira et al. (2013),
The Nearby Supernova Factory



mei@apc.in2p3.fr

Calvin Leung

Hubble/Miller Fellow 2023-2027
Campbell 205



What are they?

What are their host galaxies?

FRB offsets from HII regions (a YMC, perhaps?)

Fast Radio Bursts!

Why should we care?

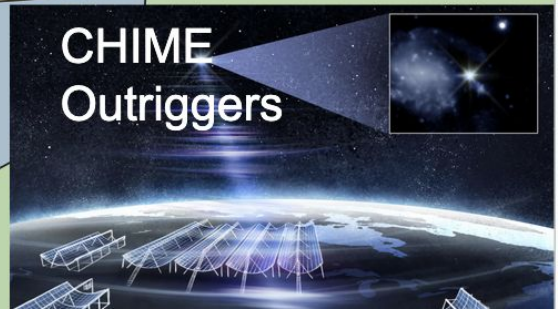
Constraining AGN feedback subgrid models & small-scale CGM physics

Baryonic feedback & S8 tension in the era of LSST/Euclid

How do we get more?

CHIME – leading the world in radio-transient VLBI

What should next-gen FRB telescopes look like?



Andrei Cuceu

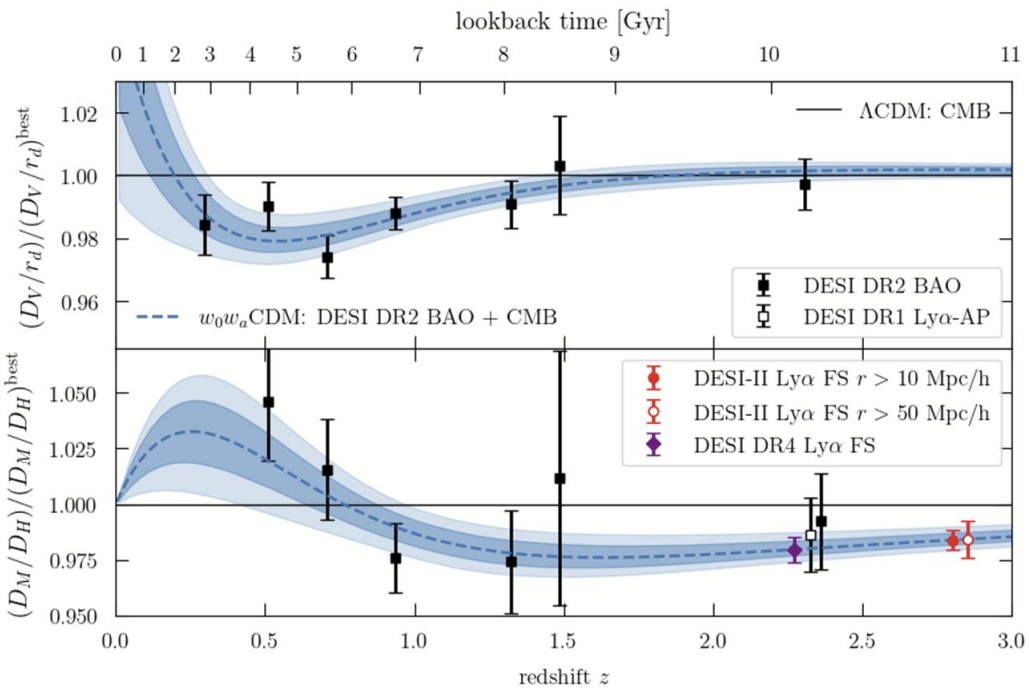
NHFP Einstein Fellow @ LBNL

DESI Lyman-alpha forest analyses:

- Lyα working group co-chair
- Year 3 Lyα full-shape Key Project
- EFT of LSS with Lyα correlations
- Study/modelling of Lyα forest contaminants (extra signal?)
- Many other projects

Building towards DESI-II High-z 3x2pt:

- Lyα×Lyα + Lyα×Gal + Gal×Gal
- Forecast constraints from Lyα forests in spectra of Lyman Break Galaxies (LBG)
- Developing modelling pipeline with EFT



NHFP

NASA Hubble Fellowship Program

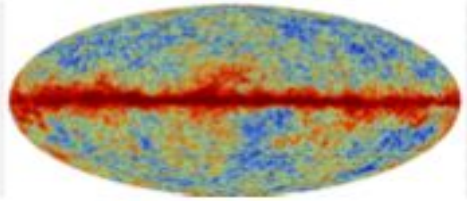
DARK ENERGY SPECTROSCOPIC INSTRUMENT

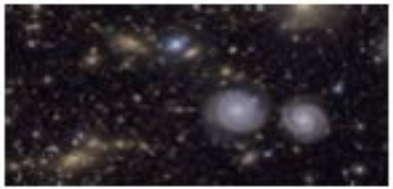
U.S. Department of Energy Office of Science

James G. Bartlett

Director, Pierre Binétruy Center
French CNRS - UCB International Research Laboratory

- Professor, Université Paris Cité on leave to French CNRS
- Research: Galaxy clusters, large-scale structure, cosmic microwave background
- Projects
  - Cosmic microwave background
    - *Planck*, Simons Observatory, CMB-S4
  - Cosmic structure
    - *Euclid*, Rubin Observatory LSST
  - P.I. ECHO mission concept to study the circumgalactic medium





Pierre Binétruy Center (CPB)

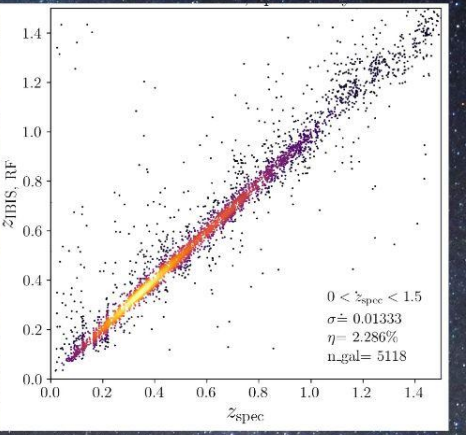
French CNRS/IN2P3 - UCB International Research Laboratory (IRL)
Hosted by the UCB Physics Department (across the bridge in the N3AS area)

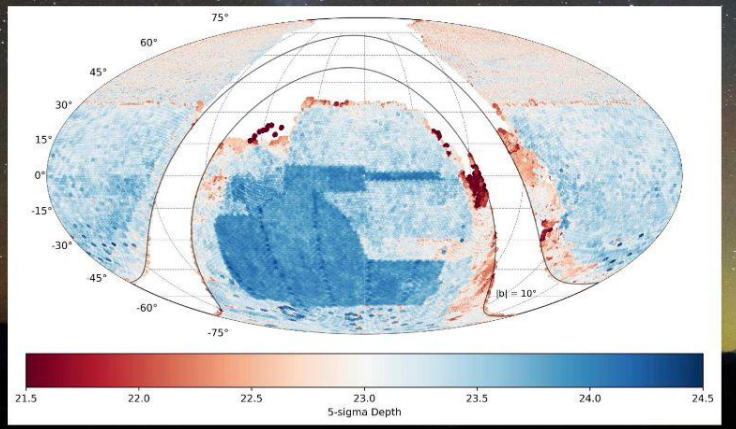
- **Objective**: Foster collaborative effort in Astroparticule Physics and Cosmology between French and American researchers in the Bay Area
  - Exchange of staff, postdocs, students between France and the Bay Area
    - Current/recent: S. Mei, R. Pain, M. Piat, R. Stompor, C. Cleland, E. De la Hoz, S. Gallego, O. Jeong, N. Franchini, N. Mai, E. Russier, J. Tang, T. Vinh Phat, A. Widmer
  - Strengthening link with Stanford/KIPAC
- The Center was renewed in Jan. 2025 for 5 years
- Three thematic axes:
  - Primordial Universe (J. Delabrouille - CNRS & LBNL)
    - Simons Observatory
    - CMB-S4
  - Large-Scale Universe (S. Mei - APC/Univ. Paris Cité)
    - *Euclid* mission
    - Vera Rubin Observatory LSST
  - Beyond the Standard Model (J. Billard - IP2I Lyon)
    - TESSERACT

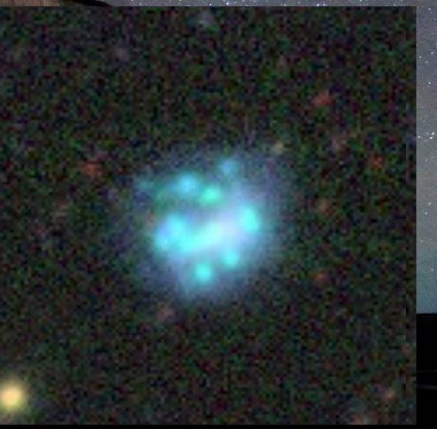
yifeiluo@lbl.gov

Yifei Luo, Postdoc at LBNL

- DESI Legacy Imaging Surveys DR11
- Photo-z's with medium-band imaging surveys (Merian, IBIS, etc.)
- Galaxy-halo connection from galaxy-galaxy lensing around dwarf galaxies
- Stellar populations of dwarf galaxies







Makai Baker

1st year PhD student @ UC Berkeley
makai_baker@berkeley.edu

BSc @ Monash Uni, Australia

- Gravitational wave data analysis
- Fast Bayesian inference
- Numerical approximation techniques

Interests @ Berkeley

Broadly in cosmology (Theory + Analysis)

- CMB/ DESI / LSS / PNG
- Perturbation theory
- Computational + statistical techniques
- … more!

Outside of PhD…

I love hiking and photography!
I'm new, so come chat!

Nicholas Huang

- Postdoc with Bill Holzapfel working on SPT
- Data/Instrumentation
  - Beam measurements and modeling
  - CMB secondaries and foregrounds
- Away from work: biking and cooking

Clara Vergès

Staff scientist @ LBL
cverges@lbl.gov https://claraverges.github.io

Research interests: CMB polarisation measurements to probe…

- Inflation
- Cosmic birefringence

What I work on

- Calibration & Instrumental systematics
- Forecasting & Experiment design optimisation
- Component separation

CMB collaborations

- South Pole Observatory – BICEP + SPT
- (CMB-S4)

Lia Lubit

lia.lubit@berkeley.edu
1st year PhD student, Berkeley Physics Department

Past Education

- ScB in Astrophysics, Brown University

Past Research

- Dark matter phenomenology (thesis w/Prof. Stephon Alexander)
- Accretion disk astrophysics
- Satellite thermodynamics
- Primordial black hole modeling

Current Research Interests

- Theoretical and observational cosmology
- Inflation and the early universe
- Dark energy and dark matter
- SO / BICEP / DESI

Related Interests

- Scientific communication and outreach

Gerrit Farren

Postdoctoral Fellow @ LBL

BERKELEY LAB

gfarren@lbl.gov

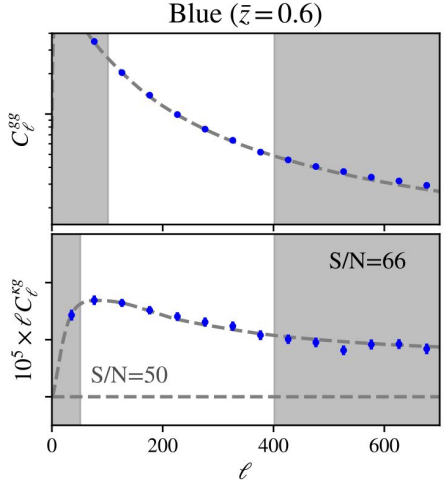
I am mostly interested in CMB x LSS …

- CMB Lensing - galaxy x-correlations
- high-z x-correlations
- x-correlation robustness and biases
- n-point cross-correlations
- Joint tSZ, kSZ, X-ray, lensing profiles

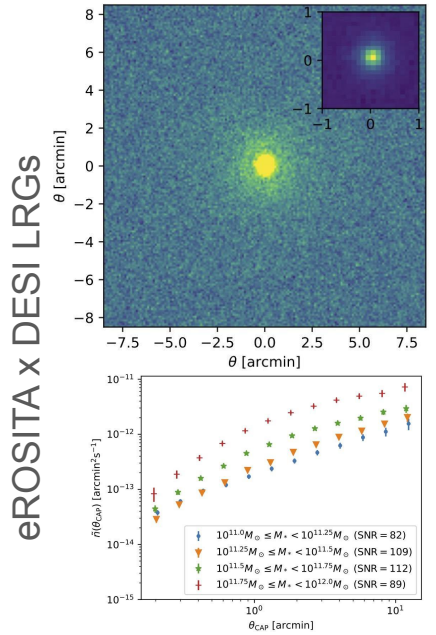
Projects I am working on …

- DESI x CMB lensing (null- and systematics tests)
- eROSITA X-rays x DESI/CMB
- x-correlation biases from galactic dust
- ggκ bispectrum (via g$^2\kappa$ skewspectrum)
- …

unWISE g x CMB lensing



eROSITA x DESI LRGs



I'm in …

ACTPol

SIMONS OBSERVATORY

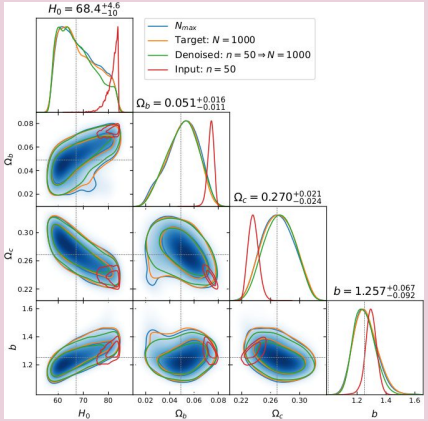
DARK ENERGY SPECTROSCOPIC INSTRUMENT

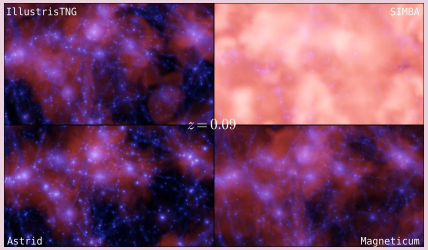
U.S. Department of Energy Office of Science

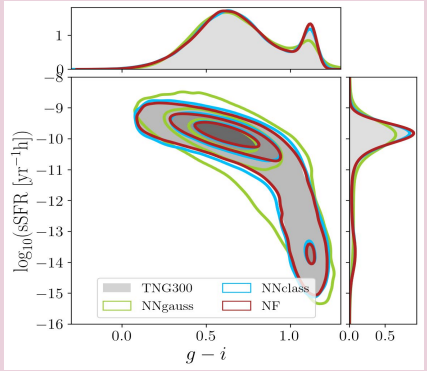
Natalí S. M. de Santi

Postdoc @UC Berkeley
natalidesanti@berkeley.edu

- Cosmological parameter inference
  - Machine learning and statistical methods
  - Hydrodynamic and DM only simulations
- Halo-galaxy connection
  - Machine learning and statistical methods
  - Hydrodynamic simulations, SAMs, and HODs
- Computational physics
  - Machine learning and numerical methods







Zarija Lukić

Staff scientist & C3 lead
Computational Cosmology Center (C3)
Berkeley Lab: building 50B, office 4218B
zarija@lbl.gov

Cosmological simulations

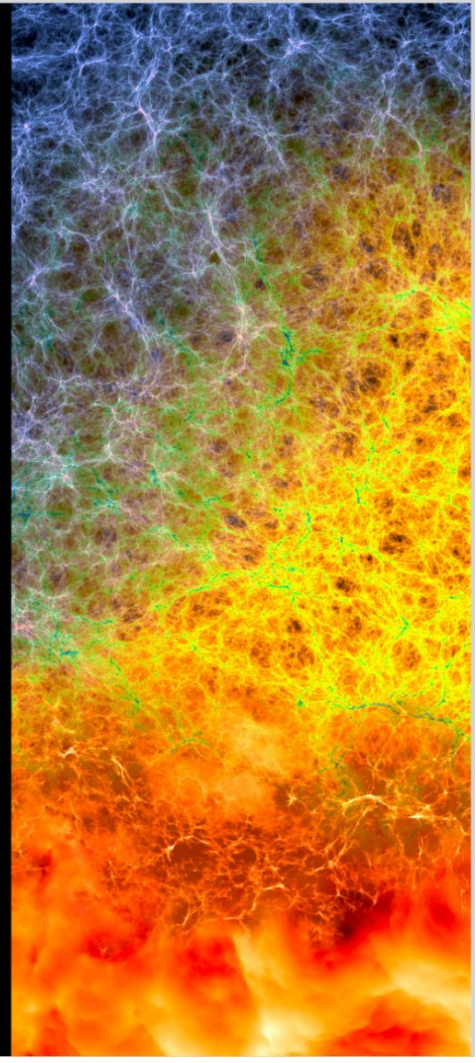
Anything simulations: physical models, algorithms, scaling on supercomputers
Nyx code: https://amrex-astro.github.io/Nyx/
Examples on arXiv: 0706.1270; 1301.4498; 1607.04218; 1905.07410; 2207.05023

Large-scale structure of the universe

Focus on the Lyman α forest and the intergalactic medium
Examples on arXiv: 1406.6361; 1808.04367; 2012.04008; 2407.04473; 2412.05372

Machine learning for cosmology

ML/AI as surrogates in simulations, foundation models, simulation-based inference
Examples on arXiv: 1706.02390; 2012.13083; 2106.12675; 2308.02637; 2502.02294



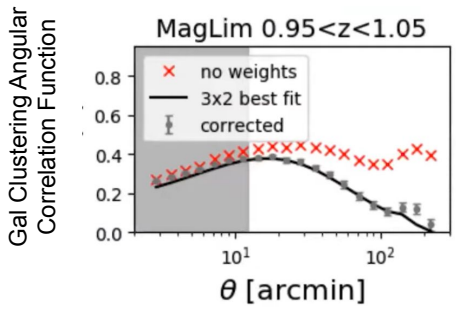
Noah Weaverdyck

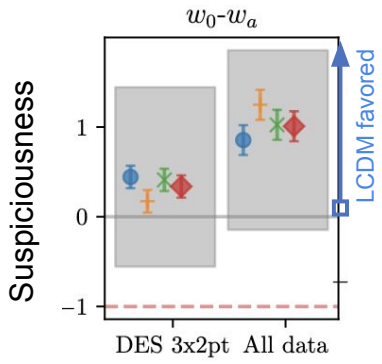
Postdoc at LBL

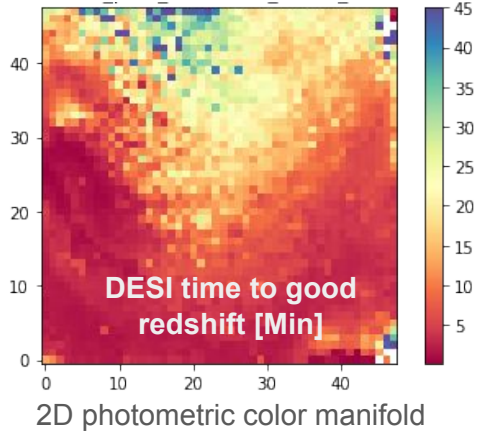
Member of Dark Energy Survey (DES), DESI, Rubin

Research interests:

- Mitigating LSS imaging systematics (applied in DES)
- Photo + spectro survey synergies
    - E.g. Direct sample characterization, photo-z calibration, implications for sample definition
- Bayesian stats, model validation and comparison metrics, robust inference
- PNG with LSS
- Cosmology under global climate change: impacts and implications







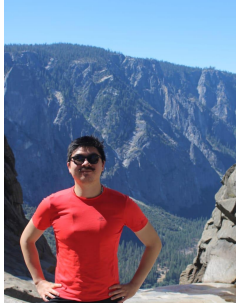
Drop me a line at NWeaverdyck@lbl.gov, or swing by #5045 at LBL

Julien TANG

(JulienTang@lbl.gov)

Centre Pierre Binétruy
CNRS • Berkeley

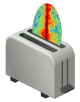
BERKELEY LAB



2nd year PhD student at CPB and C3-LBNL with Jacques Delabrouille and Michel Piat. Member of LBNL CMB group.

Research interests:

- Comparison of mapmaking methods for ground-based CMB experiments
- Mitigation of systematics such as atmosphere emission
- Delensing of CMB B-modes

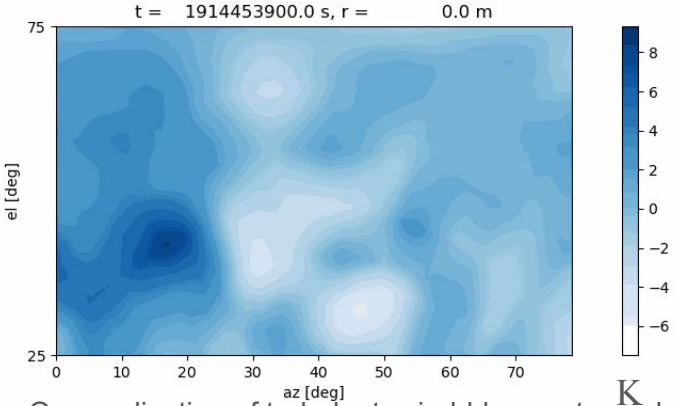


TOAST

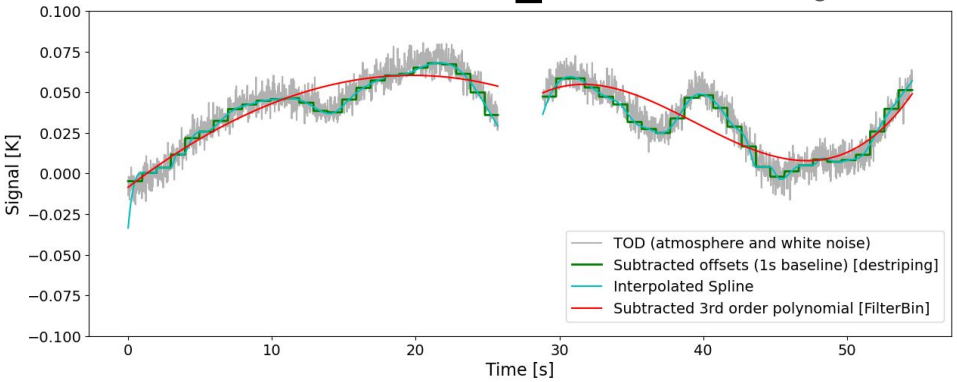
Time-ordered Astrophysics Scalable Tools (TOAST)

Frequency Maps (in progress).

Working towards minimal filtering of the astrophysical signal, given sufficient cross-linking



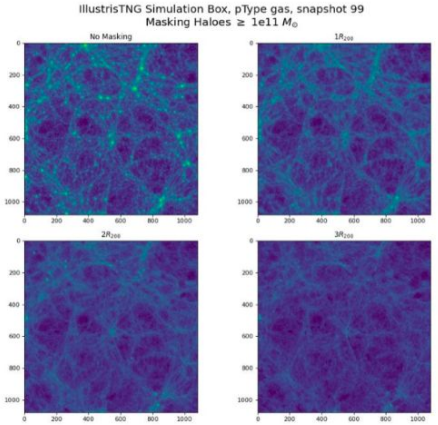
One realization of turbulent, wind-blown, atmospheric water vapor.
Using Reijo Keskitalo's atmosphere simulation tools.



Excerpt of Time-Ordered Datastreams of atmosphere emission and white noise, and fitting templates of the low-frequency drift.

Current Work:

- Model-Independent measurements of baryon feedback with lensing and kinematic Sunyaev-Zel'dovich effects.
- Studies of bound and unbound gas in various cosmological simulations.



R. Henry Liu
刘瑞涵

5th year PhD Candidate working with Simone Ferraro & Uros Seljak

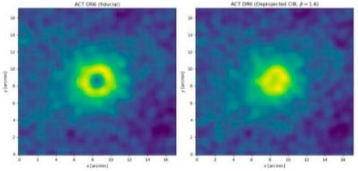
rh_liu@berkeley.edu

Teaching:

- Physics 188/288: Bayesian Statistics in the Physical Sciences

Interests and past work:

- Baryon Feedback
- tSZ effect measurements using ACTxDESI
- Simulation Reconstructions in Cosmology
- ML applications in cosmology
- Emulators in cosmology
- Bayesian Statistics/Astro-statistics



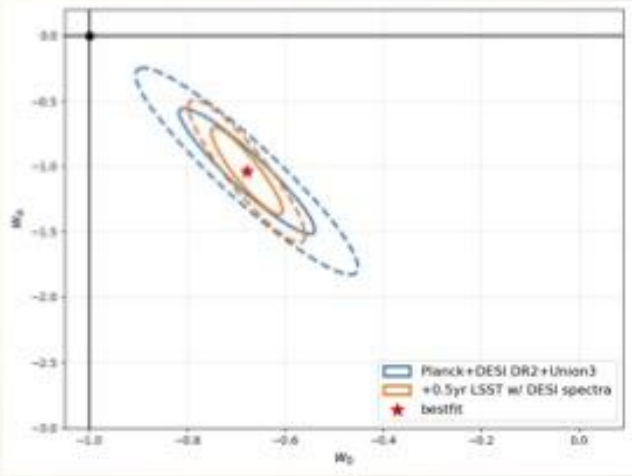
Other hobbies:

- Hiking/skiing/outdoors
- Photography/Astrophotography

Jannik Truong | 2nd yr PhD student, Perlmutter group

Supernova Cosmology Project

- Simulation and optimization of future SN surveys for better w0-wa constraints
- Synergies between DESI, LSST, Roman for SN Ia cosmology
- Magnitude standardization of SNe Ia with noisy spectra from Roman



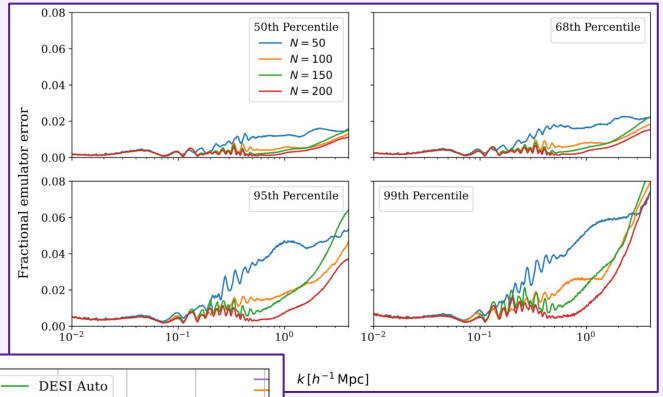
I also play piano a lot

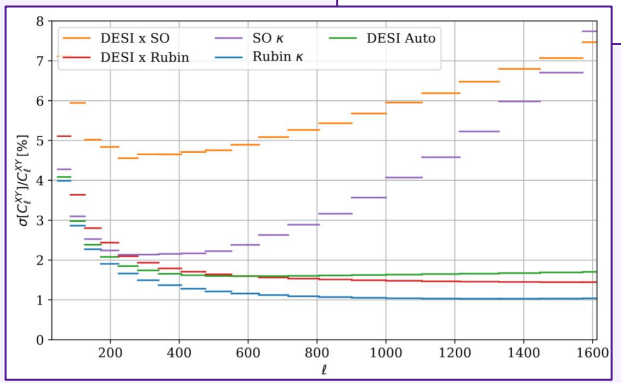
jannik@berkeley.edu

Alexa Bartlett

3rd Year
PhD Student
alexa_bartlett@berkeley.edu

- **Advisor**: Martin White
- **Research Interests:** Large-scale structure, PT, EFT, weak lensing
- **Wrapping up:** HEFT emulator, simulation/error budgeting for w0wa
- **Past:** CMB lensing trispectrum
- **Future:** More weak lensing, cosmic shear





Alejandro Cartes

(he/him)

BSc in Astronomy & MSc in Physics from U. Chile 🇨🇱

Visiting Scholar under the Simons Studentship Program

What I plan on doing at BCCP:

Exploring the CMB science & synergies with other probes

Specifically, CMB Weak Lensing guided by Simone and Gerrit

My previous research:

Supernova classification using Neural Networks and estimation of cosmological parameters from their light curves

Random facts:

My pets 🐱🐶

Lasagna

Leon

Looking forward to meeting you all!

See you soon! 😊

Rongpu Zhou

Project Scientist at LBL

- DESI pipeline & survey operations
- Forward modeling of imaging systematics in DESI and other surveys
  - Do we understand observational systematics well enough for fNL?
- New dust map from DESI
- DESI-2 imaging surveys and high-z (LAE & LBG) target selections

Diego González-Hernández

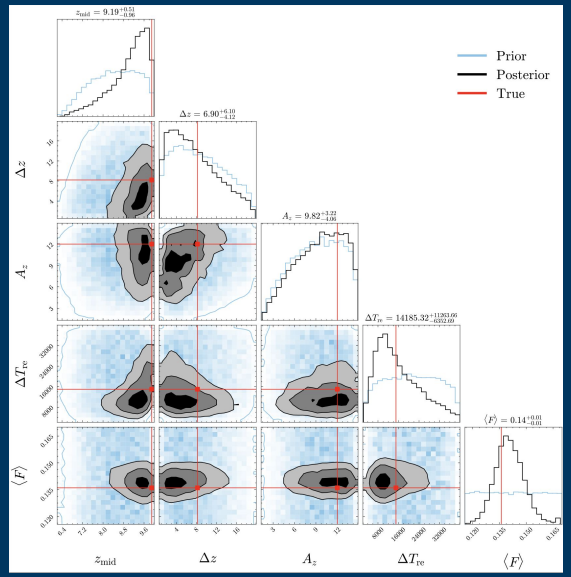
PhD candidate at UCSB | Intern at Berkeley Lab

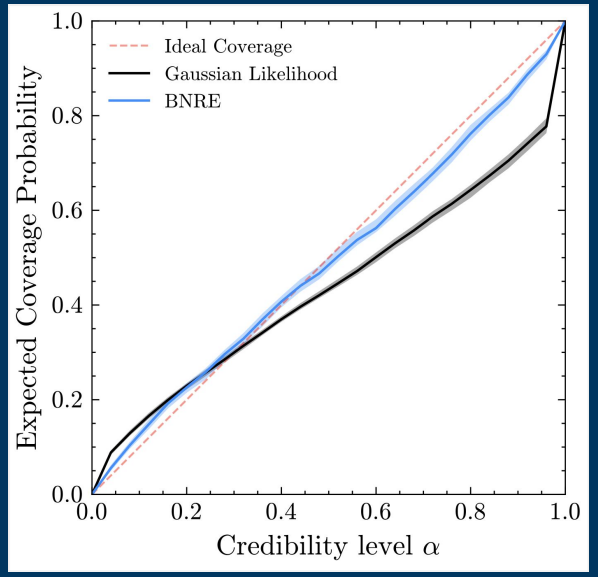
- Parameter estimation for the Epoch of Reionization using the Lya Forest at z~5.0
- Exploratory work on a foundational model using Nyx simulations

1 | Full Emulation and Inference

2 | Simulation Based Inference

3 | VQ-VAE for Nyx simulation patches





Martin White (faculty; theory+data)

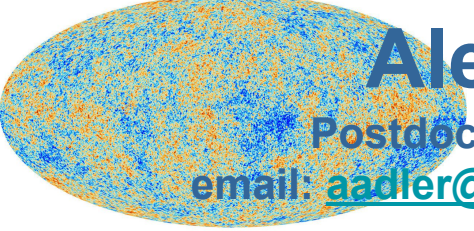
[Cosmological perturbation theory. Exploiting DESI data. CMB + LSS x-correlation. Preparing for nextGen surveys (what should we have done last time with 20/20 hindsight?). Blue-sky ideas for future surveys.]

Too many individual projects to try to list, so ...

Short term: Science with DESI … constraining inflation, GR and DE with galaxy surveys, x-correlation with CMB lensing and cosmic shear. Combining simulations and theory.

Medium term: More DESI, prep for DESI-II. What can be learned by combining DESI+Euclid+SPHEREx+PFS+LSST+SO+...? What framework should we use to model and interpret these data?

Long term: Cosmology “before noon”, i.e. large-scale structure above z~2ish. What can we learn from it, how do we map it and how do we analyze it. [StageV]

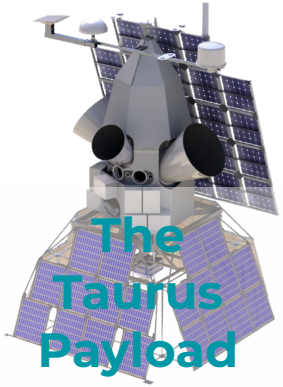


Alexandre Adler

Postdoc at UC Berkeley (technically)
email: aadler@lbl.gov office: 50B-4206 at the Lab

I work on simulations and data analysis for CMB experiments.

Most of my work revolves around the Simons Observatory: Simulating systematics for the Large Aperture Telescope (LAT) and exploring the data reduction for the Small Aperture Telescopes (SATs).



Credit: Jared May (Princeton)

I also work on a balloon experiment called Taurus, which should measure the optical depth to reionization from the CMB E-modes on the largest angular scales ($\ell \leq 10$).

Credit: Polocal/Hovercal team

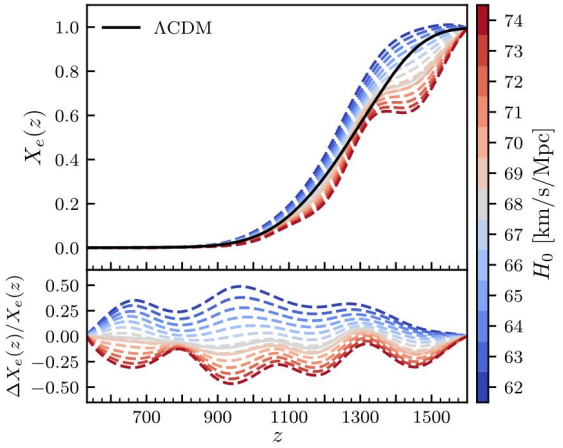
Gabriel Lynch (UC Davis)

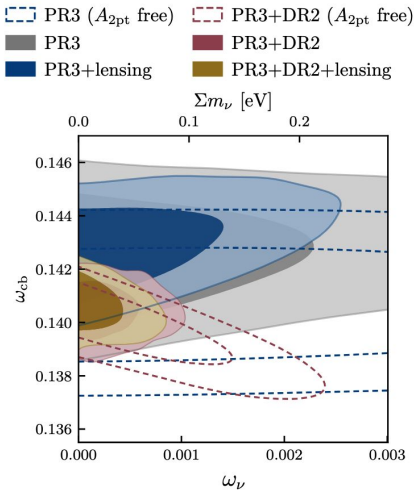
Current research interests:

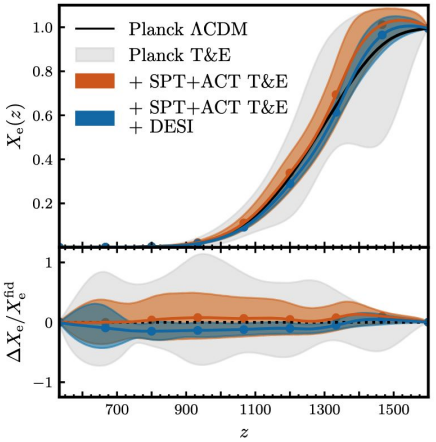
- Understanding the BAO-CMB tension, and implications for cosmological constraints on Σm_ν
- Effects of small-scale baryon fluctuations on CMB C_l's, constraints from data
- Also generally interested in developing and using CMB analysis tools, e.g. emulators, autodiff pipelines, etc

Past work:

- Modified recombination solutions to Hubble tension; reconstructing $X_e(z)$ from data; forecasts for SPT-3G, analysis for SPT-3G







Joanne Cohn (LBL 50-5015 and Campbell 305)
jcohn@berkeley.edu

Interests:

- What other systems can perturbation theory be used for/extended to?
- Simple descriptions of (often "checking" via simulations)
  - the cosmic web at large scales, at a single time, through time
    - What do estimates capture/leave out?
  - (earlier) galaxy formation and relations to structure formation, esp higher z

Not working on cluster masses to probe cosmological parameters

- because correlated scatter in measurements is hard to estimate/validate, if you want to know more about why one might worry…ask!
- very focused on systematics for clusters and elsewhere

Raul Monsalve

Associate Research Scientist and Senior Fellow

Space Sciences Laboratory (SSL), **UC Berkeley**

raul.monsalve@berkeley.edu

Research Interests and Activities

Learning about the **Dark Ages**, **Cosmic Dawn**, and **Epoch of Reionization** using 21-cm cosmology.

Designing and deploying **experiments** to measure the high-redshift 21-cm signal from the **ground and space**.

Participating in the **EDGES**, **MIST**, **EIGSEP**, and **LuSEE-Night** global 21-cm experiments.

Studying potential for cosmology of the low-frequency radio observations from the **Parker Solar Probe** NASA mission.

Nicolò Raffuzzi self presentation - LBNL

- PhD at Ferrara University, Italy
- CMB simulations and data analysis within the *LiteBIRD* collaboration
  - First release from an end-to-end *LiteBIRD* simulation pipeline (2507.07122v4)
  - A Simulation Framework for the *LiteBIRD* Instruments (2507.04918)
  - Mitigating HWP systematics at the map-making level: accuracy requirements for *LiteBIRD* (to be submitted)
  - *LiteBIRD* polarization anomalies: lack of large-angle correlation (2508.16451)
  - Unveiling V Modes: Enhancing CMB Sensitivity to BSM Physics with a Non-Ideal Half-Wave Plate (jcap)
  - Circular polarization from Pop III stars: theoretical predictions and detection prospects (in prep.)

Richard Feder (UCB postdoc)

- Member of *SPHEREx*, *DESI*, *CIBER* collaborations

General science interests:

- LSS as a probe of early universe physics
- Near-IR intensity mapping and cross-correlation science
- Astrostatistics / ML / data-driven modeling

At Berkeley:

- Redshift estimation for SPHEREx (with U. Seljak+)
- Systematics mitigation for galaxy clustering measurements
- Co-organizer of BIDMaP seminar (Thursdays @ 12pm) (free food)

Outside of work..

- I'm a musician! (saxophone, clarinet, flute)
- I love to bike and I love to hike!

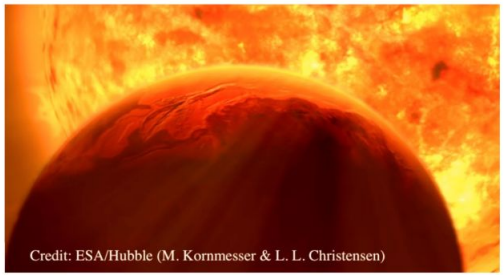
rmfeder@berkeley.edu

Taylor Hoyt

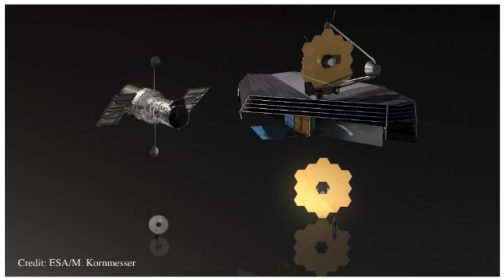
Started as an LBL postdoc, switched to the university (as of today!) to close out my appointment.

My focus is on the (accurate) measurement of extragalactic distances and using those distances to estimate the universe's expansion rate today (the Hubble constant, H0) and throughout cosmic history, H(z).

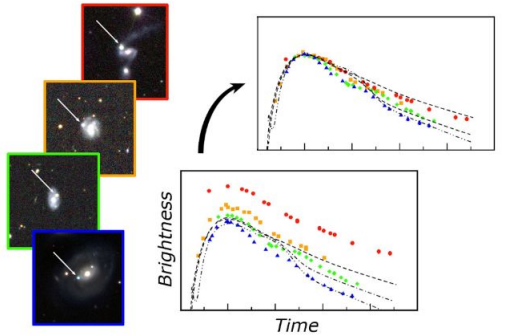
My primary research interests (visit my website thoyt.lbl.gov to see more):



The Tip of the Red Giant Branch



Observations with Space Telescopes



Type Ia Supernovae

Jan Schütte-Engel

N3AS (Berkeley-Riken fellow)

Working at the **interface** between **theoretical particle physics, cosmology and astrophysics**

- What can we learn from early and late universe GWs about particle physics?
  - Particle physics signatures in GW spectra from primordial plasma and particle decays
  - BH populations to search for new particles

- New ideas for table-top experiments.
  - How to search for GWs with $f > 10^4$ Hz?
  - How can we find dark matter?

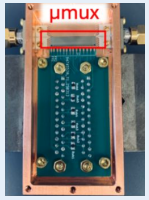
John Groh

Staff Scientist, LBNL

BERKELEY LAB

Adapting CMB sensor technologies for dark matter searches

- Developing scaling technology for TESSERACT-style sensors to enable kg-scale detectors searching for sub-GeV dark matter



Superconducting devices under test

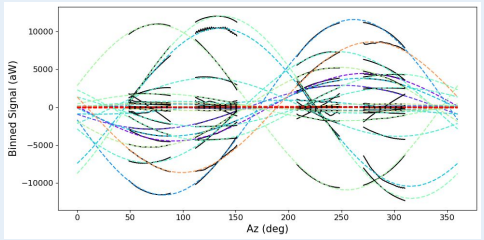
Recently installed 10 mK test facility @ LBNL

Simons Observatory

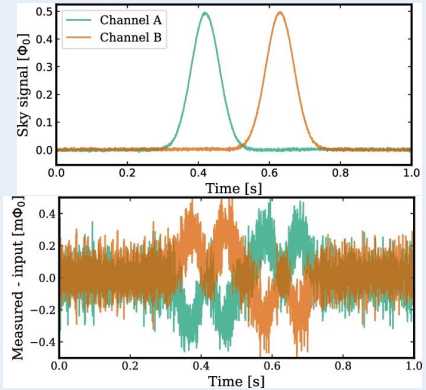
Previous CMB focus was on the SAT instruments and survey in CMB-S4, but now pivoting to the Simons Observatory

Particular interests / ongoing efforts:

- Low-ell stability
- Instrumental systematics
- Multiplexed readout
- Possible future upgrades and observatory extensions



Example effect under study: magnetic pickup from scanning through the Earth's field (Credit: T. Tsan).



Example effect under study: nonlinear crosstalk